



UNITED STATES PATENT AND TRADEMARK OFFICE

cl
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,175	01/20/2004	Kohei Yamada	2635-198	6669
23117 7590 05/01/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
			EXAMINER VATHYAM, SUREKHA	
			ART UNIT 1753	PAPER NUMBER
			MAIL DATE 05/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/759,175

Applicant(s)

YAMADA ET AL.

Examiner

Surekha Vathyam

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/20/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "541" in Fig. 22. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "200" (page 23, line 2). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

Specification

3. The disclosure is objected to because of the following informalities:
Page 16, line 16, "210" should be changed to - - 201 - -.
Page 21, lines 21 – 24, unclear what is meant by "have a common outer diameter D2 of 9mm and outer diameters D2 of different values". One of the two occurrences of D2 should be changed to D1.
Page 29, line 24, "holes "20" should be changed to - - holes 13 - -.
In claim 8, line 2, "second wall side" should be changed to - - second side wall - -.

In claim 10, line 5, "based" should be changed to - - base - -.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. On lines 1 – 2 of claim 5, it is unclear what is meant by "odd ones of the gas holes". It is unclear if more than one odd hole is required.

6. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The final portion of claim 10, "one of the electrodes closer to the base end of the gas sensor has a portion closest to the based end of the gas sensor, one of the gas holes of the first and second covers closest to the base end of the gas sensor having a portion closest to the top end of the gas sensor, the portion of the gas hole closest to the top end of the gas sensor being located closer to the top end of the gas sensor than the portion of the electrode closest to the base end of the gas sensor", is unclear in several aspects. For example, there is insufficient antecedent basis for "one of the electrodes closer to the base end of the gas sensor". It is unclear if one of the electrodes is required to be closer to the base end, or if two holes being equally close to the base end is within the scope of the claim. There is insufficient

antecedent basis for "one of the gas holes of the first and second covers closest to the base end of the gas sensor having a portion closest to the top end of the gas sensor". It is unclear if holes being equally close to the top end is within the scope of the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 – 7 and 9 – 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (US 6,348,141).

Regarding claim 1, Kato ('141) discloses a gas sensor (column 1, lines 5 – 8) which works to measure a given component content in a gas and has a length with a top and a base end opposed to the top end, comprising: a cylindrical housing (column 1, lines 30 – 37); a sensing element (12) disposed in said housing, said sensing element having a length which includes a top portion facing the top end of the gas sensor (see fig. 11), sensitive to the gas and a base portion facing the base end of the gas sensor; and a cylindrical cover assembly (200A) installed on said housing to cover the top portion of said sensing element (column 12, lines 15 – 22), said cover assembly having a length with a top end facing the top end of the gas sensor and a base end facing the base end of the gas sensor (see fig. 11), said cover assembly including a first cover (100) and a second cover (102) retained outside the first cover, the first and second

covers having side walls (see fig. 11), respectively, the side wall of the second cover having formed therein a plurality of gas holes (110) through which the gas flows inside or outside said cover assembly (column 12, lines 28 – 33), at least one of the gas holes partially facing the side wall of the first cover in a lateral direction perpendicular to a longitudinal direction of said cover assembly (see fig. 11), the at least one of the gas holes having a first portion of a perimeter closest to the top end of said cover assembly and a second portion of the perimeter closest to the base end of said cover assembly, the first cover having a top end which faces the top end of said cover assembly and is located within a range defined between the first and second portions of the perimeter of the at least one of the gas holes in the longitudinal direction of said cover assembly (see fig. 11).

Regarding claim 2, Kato ('141) discloses the gas sensor wherein the side wall of the first cover has formed therein a plurality of gas holes (106) through which the gas flows inside or outside the first cover (column 12, lines 22 – 27).

Regarding claim 3, Kato ('141) discloses the gas sensor wherein the first cover has a top end facing the top end of said cover assembly and a base end facing the base end of said cover assembly (see fig. 11), and wherein a distance $L1$ between the first portion of the perimeter of the at least one of the gas holes of the second cover and the top end of the first cover and a diameter R of the at least one of the gas holes between the first and second portions of the perimeter thereof meets a condition of $L1 \leq 0.95R$ (see fig. 11).

Regarding claim 4, Kato ('141) discloses the gas sensor wherein the second cover (102) has a top end defining the top end of said cover assembly and a base end defining the base end of said cover assembly, and wherein a distance L2 between the top end of the first cover (100) and the top end of the second cover meets a relation of $0.5 \text{ mm} \leq L2 \leq 10 \text{ mm}$ (column 14, lines 7 – 9).

Regarding claim 5, Kato ('141) discloses the gas sensor wherein odd ones of the gas holes formed in the side wall of the second cover partially face the side wall of the first cover in the lateral direction of said cover assembly (see fig. 11).

Regarding claim 6, Kato ('141) discloses the gas sensor wherein the first cover has a gas hole formed in the side wall thereof, and wherein an outer diameter D1 of the first cover at the top end thereof and an outer diameter D2 at a portion of a perimeter of the gas hole of the first cover closest to the top end of the first cover meet a relation of $D1 < D2$ (see fig. 11).

Regarding claim 7, Kato ('141) discloses the gas sensor wherein the side wall of the first cover has a wall portion tapering off to the top end of the first cover between the portion of the perimeter of the gas hole closest to the top end of the first cover and the top end of the first cover (see fig. 11).

Regarding claim 9, Kato ('141) discloses the gas sensor wherein the first cover has a gas hole (106) formed in the side wall thereof, and wherein the side walls of the first and second covers have portions continuing to the base ends thereof which are in contact with each other (see fig. 11), a distance L3 between a portion of the gas hole of the first cover closest to the base end of the first cover and a portion of a contact

between the side walls of the first and second covers closest to the top end of the first cover being less than or equal to 5 mm (see fig. 11 and column 13, lines 40 – 42).

Regarding claim 10, Kato ('141) discloses the gas sensor wherein said sensing element (12) includes at least one solid electrolyte body (14d, 14f) and a pair of electrodes (40, 42, 60, 70, 48) disposed on the solid electrolyte body (see fig. 3), and wherein one of the electrodes closer to the base end of the gas sensor has a portion closest to the base end of the gas sensor (column 12, lines 15 – 22), one of the gas holes (106, 110) of the first and second covers closest to the base end of the gas sensor having a portion closest to the top end of the gas sensor, the portion of the gas hole closest to the top end of the gas sensor being located closer to the top end of the gas sensor than the portion of the electrode closest to the base end of the gas sensor (see fig. 11).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 6,348,141).

Kato ('141) discloses the gas sensor as discussed with regards to claim 6 above. Regarding claim 8, Kato ('141) does not explicitly disclose in the embodiment of fig. 11, the side wall of the first cover having the geometry as recited in the claim. However, Kato ('141) discloses another embodiment shown in fig. 7 wherein the side wall of the first cover has a first wall portion and a second side wall located closer to the top end of the first cover than the first wall portion, the first wall portion tapering off toward the top end of the first cover, the second wall portion extending straight to the top end of the first cover and having a diameter that is uniform over a length thereof.

It would have been obvious to one of ordinary skill in the art to modify the gas sensor of Kato ('141) having the cover assembly depicted in fig. 11, to have the sidewall

geometry of fig. 7 for the inner cover because Kato ('141) discloses several embodiments for the cover assembly and in particular the embodiment in fig. 7 has the benefit of effectively avoiding the adhesion of condensed water on engine start-up and gives a quick response performance (column 16, lines 16 – 21).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kato et al. (US 5,238,552) in Fig. 4, Yamada et al. (US 5,762,771) in Figs. 16 and 23, Kojima et al. (US 6,068,746) in Fig. 12 and Makino et al. (US 6,346,179) in Figs. 6(a), 6(b) and 9 each disclose in the specification and the indicated figures, all the recited elements of independent claim 1 and dependent claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Surekha Vathyam whose telephone number is 571-272-2682. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SV
April 24, 2007



NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700